Study the relationship between acidosis and hypercapnia with corpulmonale in patients with COPD

Abstract

Introduction: The classic cardiovascular complication of chronic obstructive pulmonary disease (COPD) is cor pulmonale or right ventricular (RV) enlargement. Hypoxic pulmonary vasoconstriction, Hypercapnia, acidosis and pulmonary vascular remodeling are suggested as possible mechanisms of cor pulmonale. In this study, we aim to evaluate the correlation between acidosis and hypercapnia with corpulmonale in patients with COPD.

Methods: In this cross-sectional analytical study, 100 patients (56 male and 44 female with mean age of 66.53±10.63 years) with moderate to severe COPD exacerbation were included. Complete history taking and physical examination as well as atrial blood gas, pulmonary functional test and echocardiography was performed. Disease severity was defined according to GOLD, MMR and CAT criteria. Patients with cor pulmonale were defined and findings were compared between patients with and without cor pulmonale.

Results: 42 patients had cor pulmonale. There was no significant difference in hypercapnia between groups. Cor pulmonale patients compared to non-cor pulmonale had significantly lower FEV1 (p=0.02) and ABE (p=0.03) and higher TR (p=0.001) and pulmonary hypertension (p=0.02).There was significantly negative correlation between RV thickness with FEV1/FVC (r=-0.239, p=0.01) and RV size with FEV1/FVC (r=-0.312, p=0.002)and positive correlation with PCO2 (r=0.312,p=0.002) and HCO3 (r=0.258, p=0.009).

Conclusion: Cor pulmonale in the course of COPD accompanies with adverse outcome. These patients have worth spirometry and left ventricle echocardiographic findings, but have no difference in ABG findings.

Keywords: COPD;Corpulmonale; Echocardiography; Spirometry